

- a summing circuit for combining the plurality of received signals to produce a summed signal;
- at least one first phase adjusting circuit for adjusting a phase of at least one respective received signal prior to summing to increase the amplitude of the summed signal; and
- a modulator circuit for modulating a signal to be transmitted, wherein the modulator circuit includes:
- at least one second phase adjusting circuit receiving a carrier signal and a phase adjustment signal from the at least one first phase adjusting circuit;
- a plurality of driving circuits, each driving circuit receiving the signal to be transmitted and a respective output signal from one of the second phase adjusting circuits, for generating a respective driving signal on one of the plurality of second transmission/reception coils to generate a second magnetic field; and
- signal processing circuitry connected to the first transmission/reception coil to receive the signal in the second magnetic field.
2. The magnetic inductance communication system of claim 1, wherein said at least one second phase adjusting circuit changes polarity of the carrier signal based upon a polarity of at least one of the received signals.
3. The magnetic inductance communication system of claim 1, wherein said at least one second phase adjusting circuit adjusts the phase of the carrier signal according to phases of each of the received signals.
4. A magnetic inductance communication system comprising:
- a first transmission/reception coil producing a magnetic field including a transmitted signal;
- a plurality of second transmission/reception coils having different orientations for receiving a transmitted signal and generating a plurality of received signals;

- a plurality of amplitude determining circuits corresponding to the plurality of second transmission/reception coils for determining amplitudes of the plurality of received signals;
- a modulator circuit for modulating a signal to be transmitted, wherein the modulator circuit includes:
- a plurality of driving circuits each driving circuit receiving a carrier signal to be transmitted for generating a respective driving signal on one of the plurality of transmission/reception coils to generate a second magnetic field; and
- a selection circuit for activating at least one of the driving circuits based upon the amplitudes of the received signals; and
- signal processing circuitry connected to the first transmission/reception coil to receive the signal in the second magnetic field.
5. The magnetic inductance communication system of claim 4, wherein the selection circuit activates one of the driving circuits corresponding to a transmission/reception coil having a greatest amplitude of a received signal.
6. The magnetic inductance communication system of claim 4, wherein the selection circuit activates two of the driving circuits corresponding to a transmission/reception coils having a greatest amplitudes of received signals.
7. The magnetic inductance communication system of claim 6, wherein the modulator further includes at least one phase adjusting circuit receiving the carrier signal and a phase adjustment signal for adjusting the phase of the carrier signal provided to at least one of the two activated driving circuits so that the combined second magnetic field has a maximum value.

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